

# **Clinical Decision Support (CDS) Content and Health Level 7 (HL7)-compliant Knowledge Artifacts (KNARTs)**

## **Primary Care: Family Health History Clinical Content White Paper**

**Department of Veterans Affairs (VA)**



**Knowledge Based Systems (KBS)  
Office of Informatics and Information Governance (OIIG)  
Clinical Decision Support (CDS)**

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# Clinical Decision Support (CDS) Content and Health Level 7 (HL7)-compliant Knowledge Artifacts (KNARTs): Primary Care: Family Health History Clinical Content White Paper

by Department of Veterans Affairs (VA), , , and

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**Table 1. Relevant KNART Information: Primary Care: Family Health History KNART**

Primary Care KNART	Associated CLIN
Family Health History - Documentation Template	CLIN0009BA

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# Introduction

The VA is committed to improving the ability of clinicians to provide care for patients while increasing quality, safety, and efficiency. Recognizing the importance of standardizing clinical knowledge in support of this goal, VA is implementing the HL7 Knowledge Artifact Specification for a wide range of VA clinical use cases. Knowledge Artifacts, referred to as *KNARTs*, enable the structuring and encoding of clinical knowledge so the knowledge can be integrated with electronic health records to enable clinical decision support.

The purpose of this Clinical Content White Paper (*CCWP*) is to capture the clinical context and intent of *KNART* use cases in sufficient detail to provide the *KNART* authoring team with the clinical source material to construct the corresponding knowledge artifacts using the HL7 Knowledge Artifact Specification. This paper has been developed using material from a variety of sources: VA artifacts, clinical practice guidelines, evidence in the body of medical literature, and clinical expertise. After reviewing these sources, the material has been synthesized and harmonized under the guidance of VA subject matter experts to reflect clinical intent for this use case.

Unless otherwise noted, items within this white paper (e.g., documentation template fields, orderable items, etc.) are chosen to reflect the clinical intent at the time of creation. To provide an exhaustive list of all possible items and their variations is beyond the scope of this work.

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# Conventions Used

Conventions used within the knowledge artifact descriptions include:

<obtain>: Indicates a prompt to obtain the information listed

- If possible, the requested information should be obtained from the underlying system(s). Otherwise, prompting the user for information may be required
- Default Values: Unless otherwise noted, <obtain> indicates to obtain the most recent observation. It is recognized that this default time-frame value may be altered by future implementations

[...]: Square brackets enclose explanatory text that indicates some action on the part of the clinical user, or general guidance to the clinical or technical teams. Examples include, but are not limited to:

[Begin ...], [End ...]: Indicates the start and end of specific areas to clearly delineate them for technical purposes.

[Activate ...]: Initiates another knowledge artifact or knowledge artifact section.

[Section Prompt: ...]: If this section is applicable, then the following prompt should be displayed to the user.

[Section Behavior: ...]: Indicates technical constraints or considerations for the selection of items outlined in the section prompt.

[Attach: ...]: Indicates that the specified item (e.g. procedure or result interpretation) should be attached to the documentation template if available.

[Link: ...]: Indicates that rather than attaching an item (e.g. image), a link should be included in the documentation template.

[Clinical Comment: ...]: Indicates technical considerations or notes to be utilized for KNART authoring and at time of implementation planning.

[Technical Note: ...]: Indicates technical considerations or notes to be utilized for KNART authoring and at time of implementation planning.

[If ...]: Indicates the beginning of a conditional section.

[Else, ...]: Indicates the beginning of the alternative branch of a conditional section.

[End if ...]: Indicates the end of a conditional section.

- ☐ [Check box]: Indicates items that should be selected based upon the section selection behavior.

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# Chapter 1. Primary Care: Family Health History

## Clinical Context

[Begin Clinical Context.]

Family health history contains information that may affect a patient's risk for rare diseases that are inherited in a Mendelian fashion (e.g., Huntington disease) or for common diseases that have a hereditary component (e.g., coronary artery disease). Capturing this information in a structured format will increase its utility as an interoperable knowledge object.

**Table 1.1. Clinical Context Domains**

Target User	Provider to include Primary Care
Patient	Adult Patients
Priority	Routine
Specialty	Primary Care
Location	Outpatient

[End Clinical Context.]

## Knowledge Artifacts

[Begin Knowledge Artifacts.]

This section describes the knowledge artifact that is intended to facilitate documentation of family history. The knowledge artifact that defines this clinical use case is described in detail in the following sections:

- Documentation Template: Primary Care: Family Health History KNART
  - Documents the patient's family health history
  - Includes logic for appropriate display of documentation sections

[End Knowledge Artifacts.]



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# Chapter 2. Documentation Template

[Begin Documentation Template.]

## Knowledge Narrative

[Begin Knowledge Narrative.]

[See Clinical Context in Chapter 1.]

[Technical Note: This documentation template should be available for all outpatients for whom investigation and documentation of family health history is indicated.]

[End Knowledge Narrative.]

## Family Structure

[Begin Family Structure.]

[Section Prompt: Family structure: Consider using this section when a detailed genetic history is the intent. For routine clinical care, consider beginning with the next section. If you do complete this section, include both living and deceased family members.]

How many brothers do you have?

<obtain> Number

How many sisters do you have?

<obtain> Number

How many sons do you have?

<obtain> Number

How many daughters do you have?

<obtain> Number

How many brothers does your mother have? (your uncles)

<obtain> Number

How many sisters does your mother have? (your aunts)

<obtain> Number

How many brothers does your father have? (your uncles)

<obtain> Number

How many sisters does your father have? (your aunts)

<obtain> Number

[End Family Structure.]

## Family Health History

[Begin Family Health History.]

[Section Prompt: Family Health History: Please indicate which conditions are present in this patient's family health history:]

[Technical Note: Display the "Family Member" section whenever a condition in the "Family Health History" section is selected. The intent is, whenever a condition is selected, enable the user to indicate which family members have the condition as well as some additional information about said family member. For an example of how a family health history was created see <https://familyhistory.hhs.gov/FHH/html/index.html#>]

☐ Autoimmune/Allergic Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Autoimmune/Allergic Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Autoimmune/Allergic Disorder" is checked.]

☐ Cancer

<obtain> Conditions

<obtain> Detail

☐ Additional Cancer

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Cancer" is checked.]

☐ Congenital/Developmental Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Congenital/Developmental Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Congenital/Developmental Disorder" is checked.]

☐ Dermatologic Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Dermatologic Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Dermatologic Disorder" is checked.]

☐ Endocrine/Metabolic Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Endocrine/Metabolic Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Endocrine/Metabolic Disorder" is checked.]

☐ Gastroenterologic Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Gastroenterologic Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Gastroenterologic Disorder" is checked.]

☐ Genitourinary/Reproductive Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Genitourinary/Reproductive Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Genitourinary/Reproductive Disorder" is checked.]

☐ Hematologic Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Hematologic Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Hematologic Disorder" is checked.]

☐ Hereditary Condition

<obtain> Conditions

<obtain> Detail

☐ Additional Hereditary Condition

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Hereditary Condition" is checked.]

☐ Infectious Disease

<obtain> Conditions

<obtain> Detail

☐ Additional Infectious Disease

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that "Additional Infectious Disease" is checked.]

☐ Musculoskeletal Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Musculoskeletal Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that “Additional Musculoskeletal Disorder” is checked.]

☐ Neurologic Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Neurologic Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that “Additional Neurologic Disorder” is checked.]

☐ Ophthalmic Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Ophthalmic Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that “Additional Ophthalmic Disorder” is checked.]

☐ Psychiatric/Behavioral Health Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Psychiatric/Behavioral Health Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that “Additional Psychiatric/Behavioral Health Disorder” is checked.]

☐ Pulmonary Disorder

<obtain> Conditions

<obtain> Detail

☐ Additional Pulmonary Disorder

[Technical Note: The clinical provider should be presented with an additional set of the preceding questions for each time that “Additional Pulmonary Disorder” is checked.]

[End Family Health History.]

## Family Members with Selected Condition

[Begin Family Members with Selected Condition.]

[Technical Note: For each disease selected under “Family Health History”, display the “Family Members with Selected Condition” section of this documentation template.]

[Section Prompt: Family Member with Condition.]

[Section Selection Behavior: Select one or more. Optional.]

[Technical Note: Each time a family member is selected, the rest of the information to be obtained about that family member should be displayed for optional completion.]

- ☐ Sister
- ☐ Brother
- ☐ Daughter
- ☐ Son
- ☐ Mother
- ☐ Maternal Grandmother
- ☐ Maternal Grandfather
- ☐ Maternal Half-Sister
- ☐ Maternal Half-Brother
- ☐ Maternal Aunt
- ☐ Maternal Uncle
- ☐ Other

<obtain> Detail

- ☐ Father
- ☐ Paternal Grandmother
- ☐ Paternal Grandfather
- ☐ Paternal Half-Sister
- ☐ Paternal Half-Brother
- ☐ Paternal Aunt
- ☐ Paternal Uncle
- ☐ Other

<obtain> Detail

[Section Prompt: Age at diagnosis?]

<obtain> Age at diagnosis

[Section Prompt: Living?]

- ☐ Yes
- ☐ No
- ☐ Unknown

[Section Prompt: Age Deceased?]

<obtain> Age Deceased (Years)

[Section Prompt: Died as results of disease?]

- ☐ Yes

☐ No

☐ Unknown

<obtain> Other comments about this family member

[Section Prompt: Additional Family Member with this condition?]

☐ Yes

☐ No

[Technical Note: If response is yes, display "Family Members with Selected Condition" section again. If response is no, return to "Family Health History" section.]

[End Family Members with Selected Condition.]

## Patient Genetic Testing History

[Begin Patient Genetic Testing History.]

[Section Prompt: Patient Genetic Testing Done?]

[Section Selection Behavior: Select one, required.]

☐ Yes

[Technical Note: Completion of the following sections must be optional, as this information may not be known.]

<obtain> Test

<obtain> Results

[Section Prompt: Additional Genetic Testing/Results?]

☐ Yes

☐ No

[Technical Note: Display "Patient Genetic Testing Done?" section again when "yes" is selected under "additional genetic testing/results"]

<obtain> Additional genetic testing history

☐ No

[End Patient Genetic Testing History.]

## Historian

[Begin Historian.]

[Section Prompt: Historian.]

<obtain> Relationship to Patient

[End Historian.]

[End Documentation Template.]

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# Bibliography/Evidence

Centers for Medicare & Medicaid Services. *Eligible Professional Meaningful Use Menu Set Measures: Measure 4 of 6: Stage 2: Family Health History*. [https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2\\_EPMenu\\_4\\_FamilyHealthHistory.pdf](https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2_EPMenu_4_FamilyHealthHistory.pdf). Issued October 2012.

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# Appendix A. Acronyms

Acronym	Definition
CDS	Clinical Decision Support
CCWP	Clinical Context White Paper
HL7	Health Level 7
KBS	Knowledge Based Systems
KNART	Knowledge Artifact
OIG	Office of Informatics and Information Governance
SME	Subject Matter Expert
TO	Task Order
VA	Department of Veterans Affairs
VACO	VA Central Office
VAMC	VA Medical Center